

SECTION 083900

PRESSURE-RESISTANT DOORS

****Note to Specifier**** This specification contains component and configuration options. Where indicated choose the appropriate choice for your specific project requirements. Delete specifier instructions prior to publishing completed specification.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. [Single] [and] [Multi-span, with mullions,] FM flood plank barrier with jambs, planks, sill, and latching hardware.

B. Related Sections:

1. Division 03 – Cast-In-Place Concrete.
2. Division 04 – Concrete Unit Masonry
3. Division 05 – Structural Steel Framing.

1.2 SUBMITTALS

A. Manufacturer's data sheets on each product to be used, including:

1. Storage and handling requirements and recommendations.
2. Installation instructions.

B. Shop Drawings: Provide shop drawings showing layout, profiles, and product components, including anchorage, hardware, and finishes. Include dimensional plans, applicable material specifications, elevations and sections detailing mounting and connections, and load diagrams.

C. Calculations: Upon signed finalization and approval of dimensions, mounting location material and configuration, and load requirements;

****Note to Specifier**** Choose one (1) of the following statements.

1. Engineering calculations are not required for this barrier.
2. Submit stamped calculations by a registered professional engineer from within the state or territory where the project will be constructed or substantially improved, to verify the flood barrier's ability to withstand the design loading.

1.3 CLOSEOUT SUBMITTALS

- A. Closeout Submittals: Provide Operation and Maintenance data to include methods for maintaining installed products, precautions against cleaning materials and methods detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer must demonstrate a minimum of five (5) years successful experience in design and manufacture of similar flood related closures. Upon request, provide supporting evidence including list of installations, descriptions, name and method of contact.
- B. Minimum Qualifications: Manufacturer must demonstrate compliance and certification of a Quality Management System administered by the International Organization for Standardization (ISO). Documentation of current certification status to be provided upon request.
- C. Welder Qualifications: Welders Certified in accordance with American Welding Society Procedures for applicable material used in production of specified product.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging container with identification labels intact until ready for installation.
- B. Protect materials from exposure to moisture during storage.
- C. Store materials in a dry, warm, ventilated weathertight location. If outdoor storage is required, block materials to store at an incline, to prevent pooling of any moisture and promote runoff. Tarp materials in a tent-like arrangement, elevated above the product with open sides to allow airflow. Store all other hardware in a dry controlled environment.
- D. Use caution when unloading and handling product to avoid bending, denting, crushing, or other damage to the product.
- E. When using forklifts, use forks of proper length to fully support product being moved. Consult Approved for Construction drawings or consult with factory for proper lift points.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's indicated limits.

1.7 COORDINATION

- A. Conduct site survey and provide to flood barrier manufacturer, prior to manufacturers' commencement of shop drawings; the actual site conditions of the mounting location, to

include; material type, dimensions and configuration, interferences with mounting surface, or any other condition that may impact the ability of the flood barrier to be properly installed.

- B. Coordinate work with other operations and installation of adjacent materials to avoid damage.

1.8 WARRANTY

- A. **Manufacturer's Standard Warranty:** Product to be free from defects in material and workmanship for a period of one (1) year from date of shipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Design watertight flood planks to support, solely or in combinations of, temporary superimposed live loads as indicated below. All applied types of flood related loadings are transferred from the flood product barriers, solely or in combinations of, by mullion anchorage to structural floor slabs and/or jamb anchorage and direct pressure contact to structural walls or other structural elements.
 - 1. Hydrostatic Loading.
 - 2. Wind Loading
- B. Provide FM Global labeled flood barrier demonstrating ANSI/FM 2510 Approval for dynamic impact testing and hydrostatic testing meeting leakage requirements of less than 0.08 gallon per hour per linear foot of wetted perimeter over any 15-minute period.
 - 1. Maximum Hydrostatic Water Protection Heights: Up to 6 feet.
 - 2. Maximum Panel Section Width: Up to 9 feet.
 - 3. Maximum Structural Opening Length: Up to 10 feet, with 3 feet W.P.H. or less.
- C. Engineering Code Practices: Engineer flood products to conform to the design requirements that are based on the latest adopted edition of the International Building Code (IBC). LRFD and/or ASD methodologies are applied as appropriate to align with specific project specifications and/or limited published material data.
- D. Water Density: 64 pcf, unless otherwise noted on "Approved for Construction" drawings.
- E. Deployment: No sealant required on planks during deployment – watertight protection that deploys quickly without mess or drying time.

1.2 MANUFACTURERS

- A. **Watertight Flood Plank Barriers:**

1. Approved Manufacturer: PS Flood Barriers™, which is located at: 1150 S. 48th Street, Grand Forks, ND 58201; Toll Free Tel: 877.446.1519; Email: 4psinfo@psindustries.com; Web: www.psfloodbarriers.com or www.psindustries.com

- a. Basis of Design Product: Model: FP 530 FM.

2. Substitutions: Not permitted.

B. Single Source Responsibilities: Obtain all watertight barriers and flood plank assemblies from single manufacturer.

2.3 EQUIPMENT

A. Products Details:

1. Sealing Requirements: Flood Plank and gasket design shall provide an effective barrier against short-term high-water situations, to the protection level indicated on drawings.
2. Latching: Provide with pad-lockable latching to secure deployed barrier from tamper or theft. One (1) latch per jamb.
3. Operation: Flood Planks and latches to be non-handed to allow for reversible installation.
4. Mounting/Load Transfer: Anchor to existing structure. Flood Plank designed for specified hydrostatic pressure (and other loads as specified) and will transfer loads to adjacent structure.
5. Frame to be cast-in-place or anchored utilizing mechanical, chemical or other framing methods as designed. Manufacturer to include all anchors, water-stop, and sealants, as designed, unless otherwise noted.
6. Jamb mounting location:

****Note to Specifier** Choose type of jamb mounting location for project requirements.**

- a. Wall Face Mount:

- 1) Positive Pressure Loading, (direction of loading against flood plank so as to force the barrier against the wall structure - "seating").
- 2) Provide compression gasket with requires no inflation.

- b. Between-Wall Mount: (jambs mounted within the wall opening.)

- 1) Positive Pressure Loading, (direction of loading against flood plank as as to force the barrier against the wall structure – "seating").
- 2) Provide compression gasket which requires no inflation.

2.4 MATERIALS

A. Flood Plank: Aluminum: 6000 Series alloy.

- B. Gaskets: Factory mounted, compressible rubber type, field replaceable. Gasket does not require air inflation.
 - 1. Material: UV resistant EPDM unless otherwise noted.
- C. Frame to include jamb and optional sill members for field locating and installation on structure. Jamb members to be designed and fabricated with appropriate material as required for the loading.
 - 1. Aluminum of appropriate size and strength with welded or mechanical fastened construction.
- D. Sill:

****Note to Specifier** Choose one (1) of the following.**

- 1. No sill required, bottom gasket to seal to concrete surface. Contractor to ensure concrete sealing surface area is level (+/- 1/16 inch per 10 foot of barrier), smooth, unbroken, without cracks or relief joints.
 - 2. Embedded angle with Nelson studs, Mild Carbon Steel Hot-dipped galvanized.
 - 3. Embedded angle with Nelson studs, Stainless Steel Type 304, mill finish.
- E. Frame Mounting Hardware: Provide anchors, sealant, and water stop, as required.
- F. Operating Hardware:
 - 1. Provide hardware sized for the size and weight of the flood plank and loads.
 - 2. Hardware to be factory located on jambs and plank panels, as practical.
 - 3. Latching hardware to be as indicated on the "Approved for Construction" Drawings.
 - 4. Flood plank panel to be factory prepared for applicable latching devices.
- G. Aluminum: Mill finish, welds ground smooth, not polished.
- H. Labeling. Each watertight plank and jamb will be individually identified for matched installation.
- I. Instruction Placard: Provide pictorial and written operation instruction placards on flood plank.

2.5 FABRICATION

- A. Fit and factory assemble items in largest practical sections, for shipment to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Supply components required for anchorage of fabrications, unless otherwise noted.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another subcontractor, notify Architect of uncompleted preparation before proceeding.
- C. Inspect opening for compliance with flood plank manufacturer requirements. Verify opening conditions are within required tolerances.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's installation instructions, "Approved for Construction" Drawings, shipping, handling, and storage instructions, and product carton instructions for installation.
- B. Sills, jams, and mullions shall be installed level, square, plumb, and rigid.
- C. Sealants, water-stop, and grouting to be completed by appropriate personnel, and in accordance with product application directions, manufacturer's instructions, and "Approved for Construction" Drawings.
- D. Tolerances: All dimensional requirements must be in accordance with manufacturer's installation instructions and "Approved for Construction" Drawings.
- E. Products to be operated and field verified that sealing surfaces maintain contact at the correct sealing points.
- F. Inspect gaskets for damage, wear, and adhesion. Replace compromised gaskets immediately.
- G. Verify that latching assemblies operate freely and correctly.
- H. Verify all anchorage is in accordance with manufacturer's installation instructions and applicable data sheets.
- I. Inspect installation sealants to ensure a watertight juncture.

3.4 FIELD QUALITY CONTROL

- A. Field Testing:

****Note to Specifier** Choose testing method(s) required.**

1. Installer to perform visual dry test for gasket alignment, continuity contact and pre-compression.
2. Installer to perform hose test of barrier to frame in accordance with manufacturer's standard Hose Test Procedure.
3. Installer to construct temporary water barrier and test installed flood barrier under hydrostatic conditions.

3.5 CLEANING

- A. Touch-up, repair or replace damaged products or components before Substantial Completion.
- B. Clean all sealing surfaces.

3.6 PROTECTION

- A. Protect installed products until completion of project.

END OF SECTION